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VOICE OF THE ELECTRIC UTILITY INDUSTRY

NOPSI sale likely

NEW ORLEANS—Very early the morning of July 12, after a hard night and nearly a year of talks, negotiators reached a preliminary agreement to sell all electric and gas assets of New Orleans Public Service Inc. to the City of New Orleans.

Specific details were not to be disclosed until July 25 when negotiators will present the agreement to the city council for public review. NOPSI's 1988 assets were $486.35 million.

Sources indicate that a final agreement is likely and that it would be the best possible arrangements for all parties involved. Any final agreement would be subject to public hearing, council and regulatory approvals.

The points of contention have been price, employee security and terms, explained John Cordaro, group vice president, Louisiana Power & Light and NOPSI, both utilities of Entergy Corp. (formerly MSU).

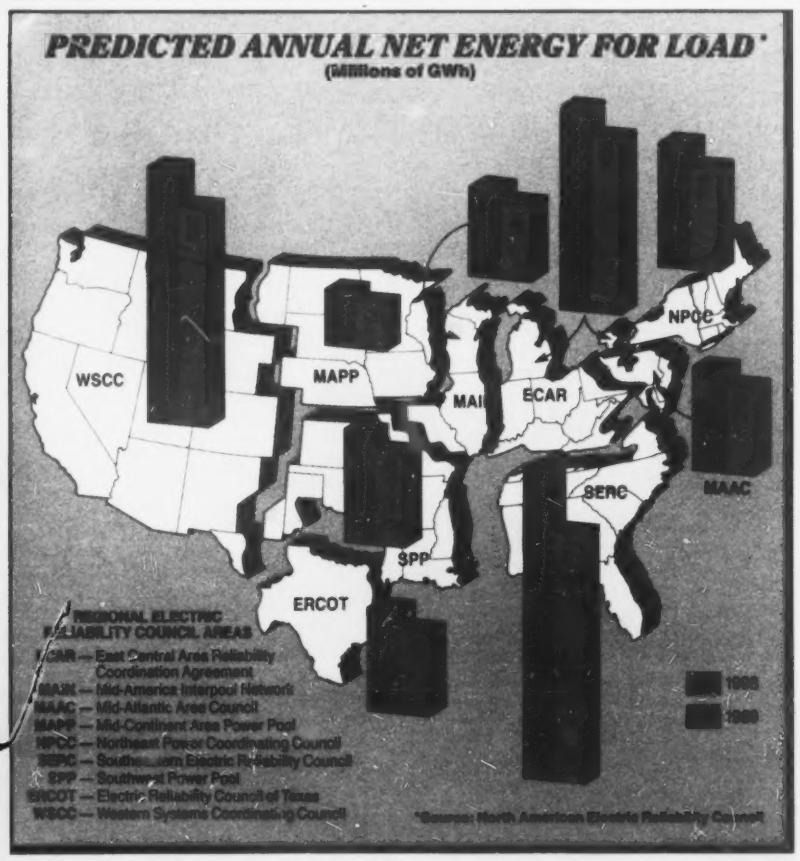
The terms include whether New Orleans' electric customers would pay their federally allocated share of Grand Gulf 1-related costs.

Glen Ortman, special council to the city on the matter, said it would be a reasonable assumption that Entergy and the city would share those costs. He added that both sides are hoping for a final deal by the end of the year and that city financing would likely be a mix of tax-free and taxable bonds.

Parties discussed NOPSI's sale over the past four years, but talks became serious in the past year with NOPSI's troubled finances. Cordaro said that negotiations have been proceeding carefully, but with optimism, as a way to resolve ongoing litigation and regulatory controversy.

On Feb. 4, 1988, after a lengthy prudence investigation, the New Orleans city council adopted a resolution requiring NOPSI to absorb $135 million of its previously deferred Grand Gulf 1-related costs. Those were reflected as a loss in 1987, in addition to the $51.2 million of such costs previously absorbed in connection with the March 1986 rate settlement with the council, the company said. Other Grand Gulf decisions also affected the situation.

As a result, Cordaro confirmed, NOPSI's financial solvency was threatened and so it sought independent special counsel experienced in bankruptcy matters to help evaluate options.



Net energy available to meet load requirements will total 3,349 million MWh in 1998, according to forecasts by the North American Electric Reliability Council. This repre- ts a 2 percent per r increase from RC's forecast of 02 million MWh for 9. NERC regional casts are shown ve.

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LATE NEWS

Congress debates clean air as Bush sent his 270-page proposal to the Capitol on July 21. Costs to the utility industry could be as high as $1 billion a year in 1996 to $4 billion a year after 2003.

Contract talks on the coal miners strike were to resume July 25 between Pittston Co. and the United Mine Workers Union. Many of the sympathy strikers have resumed work. See page 7.

Pinnacle West Capital Corp. suffered a second-quarter loss of $11.3 million, due largely to its struggling MeraBank subsidiary. The thrift unit announced it would stop giving new loans, implement layoffs and sell assets to comply with new regulations.

Tucson Electric Power Co. Chairman Einar Greve resigned as the company said it was investigating his large stock sales in the company. The company also said it might halt its dividend largely due to a regulatory decision that limits rates.

Top 100 operating report indicates trouble lies ahead

BARRINGTON, IL—*EL&P*'s Top 100 Operating Performance report for 1988 that begins on page 15 is another warning flag in the wind for the electric utility industry in the United States.

Once more, peak demands are up, and owned capabilities and reserve margins are down. Analysts feel that if this summer is anything like a repeat of last year, the drops in the latter two figures will spell trouble for electricity users in at least some large areas.

The hope of the past—nuclear generating power—continued to add capacity in 1988, but not enough to offset the climb in usage; and the dropoff in construction and plans for construction of new baseload generating power bodes ill for future years.

Another predicted problem area is the growing dependence of the industry on imported foreign oil for generation. Reversing 1987's trend, reported consumption of oil for producing electric power jumped in 1988 by a startling 24 percent among the Top 100.

Yet, with all this, restrictions on these utilities by federal, state and local governments increased, and continues to increase, and their costs keep going up.

As of now, the main hope appears to lie with the nonutility power generators. Whether this hope is unfounded remains to be seen.

And brownouts have already begun this summer.

MeraBank trouble: Regulators limit APS payments

PHOENIX, AZ—State utility regulators temporarily limited Arizona Public Service Co. payments to parent Pinnacle West Capital Corp., fearing cash transfers for the financially troubled subsidiary, MeraBank savings and loan.

Recently, the Federal Home Loan Bank Board ordered MeraBank to acquire $180 million in new capital to help sagging finances. Pinnacle officials questioned the legal merit of the FHLBB's order. They also stressed that APS funds would not be used for a bailout, questioned the Arizona Corporation Commission's power to make such limits, and is looking at restructuring.

The commission starts hearings on a final order Aug. 28. The order prohibits above-normal APS payments to Pinnacle and limits the Sept. 1 dividend payment to the same as for the second quarter: $52.7 million.

MeraBank has suffered due to the region's stagnant real estate market.

Consumers Power Co. challenges PSC authority

JACKSON, MI—Consumers Power Co. said it is appealing the Michigan Public Service Commission June 22 order that said CP can't buy more than 638 MW from the Midland Cogeneration Venture. The commission's decision confirmed an earlier interim decision (*EL&P*, March, p.1).

CP said it is confident about a successful appeal and promised to honor the contract to buy 1240 MW from MCV, in addition to five other, smaller, previously signed power supply contracts for about 100 MW. All six were filed prior to the company's original filing with the MPSC in September 1987.

"We are confident we have the legal means to decide from whom we will buy power," said Daniel Bishop, CP spokesman. Bishop said a 1988 state supreme court ruling supports CP's position.

Economic growth and an increase in the percentage of customers with air conditioning is eroding CP's reserve margin. July 10, the company hit an all-time record peak for any July at 5712 MW, cutting reserve to 9 percent.

Buying the full amount from the six projects would bring the margin up to about 21 percent, Bishop said. The PSC order would hold the Midland purchase to 638 MW and overall purchases to 1160 MW.

MCV—owned in part by CP's parent CMS Energy Inc.—is a gas-fired conversion of an uncompleted nuclear plant. Commercial operation is expected in early 1990.

News Briefs

JILL MINNER, Assistant Editor

South Texas Project Unit 2 starts up

Unit 2 of the South Texas Project began commercial operation in mid-June, according to Central and South West Corp. The unit received a full-power license from the NRC in March, and now must be certified in commercial operation by the Public Utility Commission of Texas. Owners of the South Texas Project include Central and South West Corp., Houston Lighting & Power Co., City Public Service of San Antonio and the City of Austin.

Vogtle-2 begins commercial operation

Georgia Power Co. reported that Unit 2 of its Vogtle plant started commercial operation in time to help meet summer electricity demands. Both Vogtle units and Plant Hatch, a two-unit nuclear plant located in southeast Georgia, supply about 20 percent of the state's electricity, according to the utility.

Carr to succeed Zech as chairman of the NRC

President Bush has appointed Kenneth Carr chairman of the Nuclear Regulatory Commission. Carr, an NRC commissioner, succeeds Lando Zech. "I have served with Admiral Carr both in the U.S. Navy and here at the NRC, and I know first-hand his dedication to safety," stated Zech. "...I know that Admiral Carr as the chairman will push for further improvements so that our nation can be assured of safe and reliable nuclear power," he added.

Met-Ed seeks PUC approval of competitive procurement program

Metropolitan Edison Co., a subsidiary of General Public Utilities Corp., said it is seeking regulatory approval of a pilot program to obtain power from non-utility generating facilities. The utility filed its request for a competitive procurement program with the Pennsylvania Public Utility Commission. "We believe competitive procurement will enable us to meet this projected energy requirement cost-effectively," said Robert C. Arnold, senior vice president-power supply for GPU Service Corp. The utility predicts it will need about 200 MW of additional energy beginning in 1995.

CMP names president

Central Maine Power Co. (CMP) appointed Joe C. Collier, Jr. president and chief executive officer. Collier was previously senior vice president for corporate planning and regulation at Florida Power & Light Co. He replaces John W. Rowe, who left CMP Jan. 31. "...Joe Collier's impressive record in conservation, cogeneration and planning will produce real benefits for CMP customers and shareholders, and for the State of Maine at large," said CMP Chairman George H. Ellis.

Leva to head New Jersey Utilities Assn.

Jersey Central Power & Light Co. President James R. Leva has been named president of the New Jersey Utilities Association. The association is a trade organization which represents the state's regulated electric, natural gas, telecommunications, water and sewer companies. Leva succeeds J. Richard Tompkins, president of Middlesex Water Company.

OEUI chairman chosen

The Ohio Electric Utility Institute has selected Charles A. Heller as chairman and president for a one-year term ending June 1990. Heller, president of Ohio Power Co., replaces Ohio Edison Co. President Justin T. Rogers Jr. The Ohio Electric Utility Institute is the trade association of Ohio's eight investor-owned electric companies.

UtiliCorp United buys Michigan Gas Utilities

UtiliCorp United said it has completed its previously announced acquisition of Michigan Gas Utilities. The natural gas distribution utility was purchased from Michigan Energy Resources Co. for $62 million, according to UtiliCorp. "Michigan Gas Utilities is a well managed winter peaking operation serving an area that is experiencing continued economic growth. This will create additional balance between our winter and summer peaking earnings periods," stated UtiliCorp Chairman and President Richard C. Green, Jr. Michigan Gas Utilities is headquartered in Monroe, MI.

Schlumberger Canada announces acquisition of C&D Meter Reading

Schlumberger Canada Ltd. has purchased C&D Meter Reading Services, the largest meter reading and billing company in North America, according to Schlumberger Industries. C&D will become part of Schlumberger Industries' Sangamo Electricity Division, which designs and manufactures products and systems to meter the production, transmission, and distribution of electricity. Schlumberger Canada Ltd. is an oil field services and electronic measurement and systems company.

MN Power subsidiary purchases FL utilities

Topeka Group Inc., a wholly-owned subsidiary of Minnesota Power, announced its acquisition of Deltona Utilities Inc., United Florida Consultants Inc., Pelican Utility Co., and Deltona Utility Consultants Inc. According to Topeka, the companies collectively provide utility service to approximately 85,000 customers in 10 Florida communities.

Consumers Power wins safety award from NSC

Consumers Power Co. earned a first place award from the National Safety Council (NSC) for achieving the safest work performance among large combination utilities in the United States. The company said it recorded 7.8 million consecutive safe work hours from Dec. 5, 1988 to May 2, 1989. "Consumers Power is a national leader in safety, not just among utilities, but throughout industrial America," stated NSC President T.C. Gilchrest.

Utility venture formed by Bechtel/Booz, Allen

Bechtel Power Corp. and Booz, Allen & Hamilton announced the formation of a joint venture, Booz, Allen/Bechtel Utility Performance Services. According to Booz, Allen, the venture will focus on helping utilities improve electric power production, and improving the organizational efficiency of companies with nuclear plants. "Our combined expertise will be extremely valuable in helping utility management achieve lower operating costs, higher availability and more efficient operations," said Bechtel Power Corp. Vice President Lou Peoples.

NRC extends operating license for Kewaunee

The Kewaunee nuclear power plant was granted a five-year extension of its operating license by the Nuclear Regulatory Commission. The 40-year license will now expire December 21, 2013, according to Don Hintz, senior vice president-power production at Wisconsin Public Service. "...the fact that we'll be able to operate this plant another five years will save a great deal of money for our customers," Hintz explained. The Kewaunee plant is operated by Wisconsin Public Service and owned by WPS, Wisconsin Power & Light and Madison Gas and Electric.

Utilities fined by NRC

The Nuclear Regulatory Commission recently proposed the following fines:

Commonwealth Edison Co.
A $50,000 fine for a violation of NRC safety regulations at the Byron nuclear power station

Duke Power Co.
A $75,000 civil penalty for alleged violation of NRC requirements at the Catawba nuclear power plant.

GPU Nuclear Corp.
A $50,000 fine for use of unqualified electrical equipment in the Oyster Creek generating station.

New York Power Authority
A $25,000 fine for alleged failure to comply with NRC requirements for the physical protection of the Indian Point Unit 3 nuclear plant.

Virginia Power Co.
A $500,000 fine for violations of NRC safety requirements governing the operation of the Surry nuclear power plant.

Fermi 2, Ft. Calhoun taken off NRC list of 'troubled' plants

Detroit Edison's Fermi 2 power plant and Omaha Public Power District's Fort Calhoun Station have been removed from the Nuclear Regulatory Commission's list of plants requiring increased regulatory attention. Fermi 2 was placed on the list in 1986 and Fort Calhoun in 1988, according to the utilities.

Nevada Power connects 300,000th customer

Nevada Power Co. said it recently connected its 300,000th customer. To commemorate the event, a certificate for 25 shares of Nevada Power common stock was presented to the new customer. According to Nevada Power President James C. Holcombe, the company has ranked either first or second in customer growth rates of all electric utilities over the past 15 years.

PG&E tests new fruit dehydration process

Pacific Gas & Electric Co. said it is participating in a joint research project to dehydrate fruit without changing its shape, color, taste or nutritional value. The new process, MIVAC, dehydrates fruit through the use of a vacuum microwave system that dries the fruit from the inside out. Also involved in the project are California State University, Fresno, and other utilities in Southern California, according to PG&E.

Entries sought for NLB annual awards program

The National Lighting Bureau (NLB) is accepting entries for its 10th annual National Lighting Awards Program. According to NLB, the program was established to recognize lighting applications which demonstrate the value of effective electric illumination. To be eligible, the project must have been completed on or after Jan. 1, 1987 and entries must be received no later than October 15, 1989. For more information write: the National Lighting Awards Program, c/o National Lighting Bureau, 2101 L Street NW, Suite 300, Washington, DC, 20037 or phone (202) 457-8437.

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Electricity bills decreased last summer, says survey

WASHINGTON—The national average residential electricity cost last summer was 8.32 cents per kilowatthour for 500 kWh, down 0.7 percent from the previous year, said a survey by the National Association of Regulatory Utility Commissioners.

That compares with a 4.4-percent jump in the Consumers Price Index during the same period, NARUC stated.

The average rate for the same 500 kWh was 8.04 cent per kWh during winter 1987-88, according to a similar NARUC survey. Over 12 months the rate dropped from 8.10 to 8.04 cents rate per kWh, the first time that rates have dropped since the mid-1970s when NARUC began such surveys.

Rates last summer ranged from a low of 4.2¢/kWh for Washington Water Power Co. customers in Northern Idaho, to 14¢/kWh for Commonwealth Edison Co. customers in Northern Illinois.

The study shows 10 service territories where consumers pay more than 11¢/kWh and 21 service areas where consumers pay less than 6¢/kWh. Actual consumers' rates depend on the usage level and applicable state sales tax.

According to Department of Energy regions, the Northeast and Pacific regions were most expensive and the Northwest and Southern, the least.

The survey included 188 service areas of major investor-owned regulated electric utilities in 49 states and the District of Columbia.The bills for residential electric service for June, July and August were reported to NARUC for 250, 500, 750 and 1000 kWh.

A copy of the 211-page report may be obtained for $19.50 from NARUC, P.O. Box 684, Washington, DC 20044. NARUC is a nonprofit organization.

Rank	DOE Region		Avg. Cost Cents/kWh 500 1988
1	2	North East	10.6
2	9	Pacific	9.3
3	1	New England	9.1
4	5	Mid-West	8.6
5	7	Central Plain	8.4
6	6	South West	8.2
7	3	Mid-Atlantic	8.1
8	4	Southern	7.5
9	8	Rocky Mountain	7.3
10	10	Northwest	5.5
		National Average	8.32

Company	State	Avg. Cost Cents 500 kWh	Summer '88 Rank
Commonwealth Edison Co.	Illinois	$0.140	1
Consolidated Edison Co. of N.Y.	New York	$0.133	2
Long Island Lighting Co.	New York	$0.129	3
Nantucket Electric Company	Massachusetts	$0.127	4
Orange & Rockland Utilities Inc.	New York	$0.124	5
Philadelphia Electric Co.	Pennsylvania	$0.120	6
Kauai Electric Co.	Hawaii	$0.118	7
San Diego Gas & Electric Co.	California	$0.116	8
Hawaii Electric Light Co.	Hawaii	$0.114	9
Iowa Electric Light & Power Co.	Iowa	$0.113	10
United Illuminating Co.	Connecticut	$0.113	11
Public Service Elec. & Gas Co.	New Jersey	$0.111	12

Company	State	Avg. Cost Cents 500 kWh	Summer '88 Rank
Washington Water Power Co.	Idaho	$0.042	188
Washington Water Power Co.	Washington	$0.043	187
Potomac Electric Power Co.	Dist. of Col.	$0.044	186
Pacific Power & Light Co.	Washington	$0.044	185
Idaho Power Co.	Idaho	$0.045	184
Idaho Power Co.	Oregon	$0.048	183
Montana Power Co.	Montana	$0.049	182
Portland General Electric Co.	Oregon	$0.051	181
Kentucky Utilities Co.	Kentucky	$0.052	180
Puget Sound Power & Light Co.	Washington	$0.053	179
Citizens Utilities Co.	Vermont	$0.055	178
Pacific Power & Light Co.	Oregon	$0.056	177

Source: NARUC 1988 Summer Survey of Residential Electric Bills

SMUD evaluates bids; plant may stay nuclear

SACRAMENTO, CA—Quadrex Corp. looks like the top prospect after the 10 days of bidding for the Sacramento Municipal Utility District's closed Rancho Seco plant, according to criteria laid out by SMUD. Bidding was June 21-30.

Quadrex and Stone and Webster Engineering Corp offered $232 million for the plant, closed by SMUD following a non-binding June referendum. It was the only proposal received that would keep the plant nuclear-powered, assume ownership and license and decommissioning, SMUD said.

Sacramento Delta Power Corp., a subsidiary of Portland General Exchange Inc., offered $100 million for non-nuclear components in an offer to repower the plant for natural-gas.

CMS Energy Corp., parent to Consumers Power Co. in Michigan, also proposed conversion to natural gas.

The Quadrex proposal includes $50 million in cash, the assumption of over $182 million in current SMUD decommissioning liabilities and nuclear insurance obligations required by Price-Anderson, and the offer to sell power to SMUD at pre-determined rates.

SMUD staff were clarifying parts of the Quadrex proposal and planned to report to the board July 20, about the time *EL&P* was scheduled to print.

SMUD chose to consider only the Quadrex proposal partly because of an Aug. 11 filing deadline to put the matter on a Nov. 7 referendum, since it involves continued nuclear operation at the plant. A SMUD spokeswoman said that other bids had not been ruled out.

Consolidation Power Co. and Methacoal Corp. submitted bids, but did not include the $500,000 deposit required to cover costs of evaluating the bids.

At Rancho Seco, SMUD will cut nuclear staff by 500 and non-nuclear staff by 100. The cuts will be made by voluntary separation proposals first, then layoffs.

NEPCo gets OK for marginal wholesale rates

WESTBOROUGH, MA—New England Power Co. has been given approval by the Federal Energy Regulatory Commission to employ marginal-cost rates in wholesale transactions.

According to NEPCo, the approval resolved the rate design portion of the rate case filed last September. It will be revenue neutral, said the company.

Only utility

The company said it is now the only wholesale generating and transmission utility approved to use a marginal-cost rate design.

Richard P. Sergel, vice president of rates for NEPCo's affiliate, New England Power Service Co., said that "by implementing a marginal-cost rate design, we demonstrate to each customer the costs that increased electrical usage places on the company, thus emphasizing the importance of energy conservation." Pointing out that energy conservation is especially important in New England, where electric capacity is tight, he suggested that the new rate will show customers that increased usage will lead to higher costs, yet will still allow the company to charge rates that are among the lowest in the region.

Under NEPCo's marginal-rate design, and the theory it is based on, customers can be expected to expand their electrical usage to the point where the value to them of an additional unit is equal to NEPCo's cost to produce that unit. At that point, they will theoretically stabilize use.

The company's marginal-cost rate design is designed to collect the embedded revenue requirements while simultaneously providing a marginal-cost signal to customers. This involves two blocks of both demand and energy charges:

- An initial block (applicable to 80 percent of each customer's average monthly usage in the base year 1985).
- A tail block (applicable to all usages in excess of the previous level).

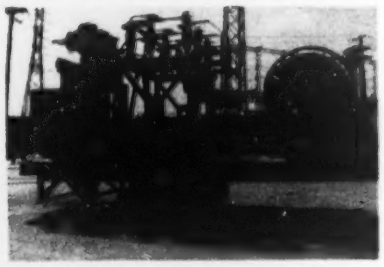
The tail block demand and energy charges are based on NEPCo's estimates of capacity and energy costs (beside the costs recovered under the fuel adjustment clause) for the next 30 years, adjusted for peak or non-peak months and time of use. Both initial- and tail-block energy charges are higher for onpeak hours.

Attorney Edward Berlin of Swidler & Berlin, NEPCo's counsel, said the FERC did allow a Wisconsin utility to use a marginal-cost wholesale rate design back in 1983. But that decision was reversed by the U.S. Court of Appeals in 1984. The two situations differ, he pointed out, because unlike the Wisconsin decision, the NEP case involved settlement by agreement of all the affected parties. Settlement was reached by NEPCo, state regulatory agencies in Massachusetts, Rhode Island, and New Hampshire, and all of NEPCo's wholesale customers except the town of Norwood, MA.

Rate increase already effective

The company's 1988 rate filing at FERC also included a request for a rate increase. This increase went into effect on May 1, 1989, subject to refund and a settlement of most of the issues associated with this aspect of the filing. These issues have been submitted to FERC and will be addressed in a later order.

Substation travels to sites where needed



"This substation can be moved to a trouble spot, connected and placed in-service in an estimated eight hours," says Bob Heatin, Public Service of New Hampshire transmission substation engineer. The custom-built, two-module unit can be relocated to any of PSNH's 35 major substation locations. The primary voltage on the transformer is 115 kV, and the secondary is 34.5 kV. The $800,000 substation contains all the protective devices and mechanisms that a permanent one does. PSNH substation electricians and line crews are being trained on installation and operation of the mobile substation, which was manufactured by Westinghouse Electric Corp., St. Louis.

COMMENTARY

Commissions should regulate, not manage, utilities

Who should decide if and when an electric utility can build new capacity? Who should establish limits on the amount of generation to be made available at any given time within a state? Who is responsible for deciding how future customer demand for electricity will be met?

Broadly accepted historical precedent suggests that the answer to all three questions is *local utilities*, which are mandated by law to provide a power supply sufficient to meet customers' demands. But the recent actions of the Michigan commission make it clear that answers to such questions aren't as simple and straight forward as many might believe.

Briefly, the Michigan Public Service Commission has ruled that Consumers Power Co., the operating utility subsidiary of CMS Energy, must limit use of power from its Midland Cogeneration Venture (see p.1 story) to not more than 638 MW, that it must take 522 MW from other cogenerators, that not more than 55 percent can come from any one source and not more than 75 percent from any one fuel (which is why the MCV portion can't exceed 638 MW) and that the total of purchased power must not exceed 1160 MW.

Back in March, we took the position (see "Commission performance: a narrow path to walk," p.4) that although the Michigan Commission's actions were not unflawed, they did represent a sincere effort to stimulate a more competitive power-supply environment in Michigan that would benefit the customers of Consumers Power. The goal, as we read it, was to encourage non-utility sources of generation to compete for Consumers Power's business. Although we still believe that the commission acted in good faith, it's now clear that the commission overstepped the bounds of its authority.

Certainly a state commission has the right to conduct its own studies and develop projections of future power requirements. It has the right, and responsibility, to meet with the utilities under its regulation and to discuss those projections and reconcile them with utility estimates. It seems to us that a commission has the right and responsibility to set the basic ground rules under which a utility can evaluate all its power supply alternatives.

But commission personnel come and go. Whether elected or appointed, commissioners seldom remain on the job as long as it takes to build a generating station. Thus commissioners seldom will be around to accept the blame and responsibility if a wrong decision precludes a regulated utility from meeting customer demand. Nor can short-term regulators be held responsible for any power supply deficiencies resulting from cogenerators failing to deliver on promises or contracts.

When a commission decides unilaterally how a utility must or must not act, and specifies how much of a given commodity the utility will purchase, from whom and at what price, it is moving into the utility's board room. It is making specific management decisions...and it is making those decisions without assuming any of the responsibilities for their consequences.

Authority without responsibility is wrong. Moreover, as was the case in Michigan, when a commission rules that a utility must act contrary to binding legal contracts it has entered into, it is not acting responsibility.

As the old saying goes, "The road to Hell is paved with good intentions." Need we say more?

A win-win-win-win-winner

Talk about good deals! The recent announcement of the 55-MW combined-cycle power plant to be built in Boron, CA, has to be one of the best. First, Southern California Edison will receive primary power from the 870-million unit. Westinghouse Electric, through its Wesgen Inc. subsidiary, will build and operate the plant, as well as own what is reported to be a "substantial" portion of the facility. Westinghouse also will provide the 40-MW combustion turbine and 15-MW steam turbine. Southern California Edison Co. gets the power. Pacific Gas & Electric will derive revenues and profits, from selling the plant natural gas. U.S. Borax & Chemical Co. will get economical process heat and backup power for its plant. Finally, Prudential Insurance of America makes a profitable loan. Everyone, including customers, wins.

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LETTERS

Transmission access

Your editorial in the May issue of *EL&P* (p.4) made several good points concerning electric power transmission access.

You state that "the vast majority of investor-owned electric utility managements are dead set against any sort of shift in procedures, policies or regulations that would allow any outsider access to their transmission facilities ...because they believe any move toward opening up the transmission network to outsiders would pose a direct threat to their customers and shareholders." You then go on to observe that this point of view could cause the industry to fail to take advantage of opportunities [to] sell transmission to third parties at "fair" but profitable rates.

I don't know if this point-of-view is indeed shared by a "vast majority" of the industry, but I do definitely agree that to the extent it does, it reflects a lost opportunity for, not threat to, the industry's shareholders and its customers.

We are all sensitive to the fact that the reliable operation of our electric power system must continue to be a top priority, but pursuit of this important priority need not exclude the pursuit of other important goals, including the use of the electric power transmission system to improve the efficiency and reduce the costs of the generation sector.

The increasing competition in the electric power industry is not only inevitable, but it is also good. It will enhance the efficiency of this critical energy sector without eroding the integrity and reliability of the system. But in order to fully realize the advantages that are available from competition in the electric power industry, we must have a transmission system that is capable of moving power to market. This requires not only an adequate physical system, but also a policy regime that offers the necessary assurance that the system will be made available to generators willing to pay the fair costs of moving their power.

On this point I agree with your observation that it would "be better [for the industry] to work creatively to accommodate transmission access on a voluntary basis, rather than wait for federal and/or state regulators to impose their idea of what's best." It strikes me that a voluntary regime of transmission access to power suppliers is probably the best way to assure the continued integrity of the system and the proper accommodation of competition in the generation sector.

Martha O. Hesse, Chairman
Federal Energy Regulatory Commission,
Washington, DC

Metering trends

I enjoyed the "Complex requirements change metering operations," in your May issue (p.38).

Sam Hardy's comments in the last paragraph of the article focusing on metering and the customer are particularly timely and interesting. Customer wants are changing metering and even the total customer billing process.

My company, Kansas Gas & Electric Co., Wichita, is a 50-percent owner in CIC Systems Inc., Brentwood, TN, makers of PowerStat, a prepaid electric system. The system does exactly what Mr. Hardy described as "the system of the future." And PowerStat has met with overwhelming customer acceptance in tests conducted over a three-year period. The product can provide time-of-use pricing, customer-premise load management, prepayment that greatly enhances cash flow, and it eliminates all the negative customer interfaces.

PowerStat fits well with existing standard metering systems, yet uses current technology to benefit both the utility and customer.

Steven G. Menasco
Assistant Manager-Wichita Region
Kansas Gas & Electric Co.
Wichita, KS

Utilities plan lowest raises for salaried workers

NEW YORK—Utilities will give salaried workers the lowest pay increases, 4.5-5 percent, this year and next among classifications in the Conference Board's annual private-sector salary survey covering 501 companies in a wide variety of industries.

Increases for salaried workers in all industries studied will average 5 percent this year and next, while executives will receive slightly higher pay hikes, with increases averaging 5.5 percent, the report said.

"Relatively low rates of inflation have helped companies hold down salary costs for four consecutive years now," explained Charles Peck, a compensation specialist at The Conference Board. "But another factor is that more companies are using special merit awards, incentive plans for outstanding achievement and other types of variable pay to keep salary costs under control."

The Board reports that 76 percent of surveyed firms uses at least one variable pay program. Most popular is the payment of special cash rewards for outstanding individual contributions (40 percent). About 36 percent offer incentive pay for reaching specific performance targets; 26 percent give lump-sum merit awards; 26 percent also have profit-sharing programs; 18 percent offer team incentives and 15 percent have gain-sharing programs.

These are "increasingly being provided for employees other than executives and sales personnel, who have long enjoyed such benefits," Peck noted.

Salary Outlook

	1988				1989 Est.			
	Number of Companies	Median	Middle 50% Range Low	High	Number of Companies	Median	Middle 50% Range Low	High
All Industries								
Nonexempt	468	5.0%	4.5%	5.5%	353	5.0%	4.5%	5.5%
Exempt	490	5.0	4.0	5.5	542	5.0	5.0	6.0
Executive	474	5.5	5.0	6.0	503	5.5	5.0	6.0
Utilities								
Nonexempt	54	4.5	3.5	5.0	42	4.5	4.0	5.0
Exempt	54	5.0	4.0	5.5	48	5.0	4.5	5.5
Executive	60	5.0	4.5	5.5	44	5.0	4.5	5.5

Site narrows for first private enrichment plant

CHARLOTTE, NC—Louisiana Energy Services—a five-partner joint-effort—is proposing a site near Homer, LA, for the nation's first privately owned facility for nuclear fuel enrichment services.

Three electric utilities are involved in the project: Duke Power Co. of Charlotte, NC; Graystone Corp., a subsidiary of Northern States Power Co. based in Minneapolis, MN; and Louisiana Power and Light of New Orleans, LA. Other partners are Fluor Daniel Inc. based in Irvine, CA, and Urenco, a European enrichment consortium based in Marlow, England.

Duke Power had previously supported such a private enrichment effort, so the June 9 announcement was not unexpected. The consortium is proceeding under a memorandum of understanding effective June 1.

The plant, expected to be operational in 1996, will be capable of supplying approximately 15 percent of the enrichment requirements of U.S. nuclear power plants, the company said. It will use Urenco's centrifuge enrichment technology, utilized in Europe for more than 13 years.

The physical separation process uses a centrifuge to enrich gasious uranium hexafluoride, above 133.4° F. Low pressure prevents the release of the corrosive-chemical gas. The materials, before and after the process, are solid. The enriched uranium hexafluoride is then shipped to a fuel processing plant.

Enrichment typically represents 40 percent of the cost of the fuel. U.S. enrichment services have been provided by the U.S. government for 45 years.

A one-year evaluation is underway to choose the actual site, somewhere in Clairborne Parish. About 400 construction jobs and 200 permanent jobs are expected.

New ventures: ABB, gas turbines, Cablec purchase; Seabrook, Shoreham

BARRINGTON, IL—Various new ventures in power plants and industry suppliers highlight recent developments.

Westinghouse new plants

Westinghouse Electric Corp. contracted with Intercontinental Energy Corp. to supply two 300-MW, cogeneration power plants in Bellingham, MA and Sayreville, NJ, for $600 million.

Chase Manhattan Bank structured and underwrote the financing and syndicated it to a group of 10 banks.

The natural-gas fired, combined cycle units are expected to begin commercial operation in 1991. Boston Edison Co., Montaup Electric Co. and Commonwealth Electric Co. will buy Bellingham electricity. Jersey Central Power and Light will buy Sayreville electricity.

In a separate transaction, Westinghouse took an equity position in a $70-million, combined-cycle, 55-MW, natural gas cogeneration unit that will provide electrical energy to Southern California Edison Co.

More cable consolidation

The parent company of Cablec Corp., a major power and control cable company, bought BRIntec Corp. for about $88.5 million cash on June 16.

The Brand-Rex divisions of BRIntec, manufacturers of electronic and electrical cables, will operate as affiliates of Cablec Corp. Brand-Rex Ltd. of Scotland will be integrated into BICC Cables in Europe. LPL Investment Group Inc., parent company of the Amphenol Corp., is to buy the majority of BRIntec's connector businesses.

Cablec Corp. is based in New City, NY. BRIntec's headquarters will remain in Willimantic, CT.

ASEA Brown Boveri's new subsidiary

ABB Energy Ventures of Princeton, NJ, is a new subsidiary that ASEA Brown Boveri formed to develop, own and operate nonutility generation and transmission projects around the world.

Peter Giller, president of the new venture, said the company was formed to benefit from the global trend to independent power producers.

Shoreham, Seabrook

About 95 percent of Long Island Lighting Co. shareholders approved the Shoreham shutdown package, as expected. Federal initiatives are challenging transfer of license to the state and decommissioning.

The NRC pulled Seabrook's low-power license after a procedural violation reguarding actions after a valve failure. A spokesman for New Hampshire Yankee said there was no danger. Commercial operation is expected by January 1990.

Completion of *Electric Light & Power's* EEI Annual Meeting coverage will appear next month

Top 100 correction

Several rankings of Dominion Resources in the June Top 100 Electric Utilities Financial Performance report (pp. 13-16) were incorrect because the data furnished was incomplete. Dominion Resources revenues increased 2.4 percent in 1988, which would have ranked the company 72nd; its net income, up 1.84 percent, would have ranked it 50th. Dominion Resources' 1988 common stock earnings performance was listed properly, down 0.44 percent, ranking the company 55th.

"We're making Total Quality an obsession at Westinghouse."

"I intend to make Total Quality the driving force of our long-term competitive success. We're doing things continuously to make us clearly the world leader in quality as it applies to design technology, manufacturing technology and long-term relationships with our customers."

The Top 100 electric utilities' 1988 operating performances

Henry Stein
Engineering Editor

Electric demand in the United States continues to grow along with the Gross National Product (GNP), although at a slightly different rate than previously. Consequently, more and more is being expected from the country's electric utilities. But the public and government at all levels seem to be far less willing to give those same utilities what they ask for to produce and supply these mounting power needs.

Caught between a rock and...

In addition, the industry's fixed costs of building and operating generation capacity have increased. A large part of this increase for utilities that recently completed nuclear plants is due to the costs of those facilities, notes the report "Electric Power Trends" from Arthur Andersen & Co. and Cambridge Energy Research Associates. However, new coal plants also cost more, in part, because of tightened air-pollution regulations and their enforcement.

The Andersen-Cambridge report also brings the lowered price of oil into the economics picture for the energy industry. The paper notes that if oil prices had remained steady or continued to rise, as they had been doing in the '70s, the utility industry would have been well-positioned to provide comparatively low-cost power from its coal and nuclear plants. When oil prices not only stopped climbing but actually started falling in the early '80s, the utilities' economic position then was considerably weakened.

Results of being caught there

The consequences of these factors can be readily seen in the results listed by the Top 100 electric utilities listed here. Their peak demand increased by 5.2 percent in 1988, while total system capability only went up by 1.0 percent, and the overall system reserve margin decreased from 22 percent in '87 to less than 18 percent in '88 (Table 2).

Already in June, the effects of this shortfall were seen, as power reductions took place in the Atlantic States (see "Did summer shortages begin?", p.35). More problems have been predicted for this area and New England, in particular.

Then Potomac Edison also reported reducing voltage on its electrical system by 5 percent on June 27, saying the reduction was caused by demand for energy from the other mid-Atlantic utility customers.

The United States Energy Association (USEA) sounded another warning note. In its "3rd Annual Assessment of the United States Energy Policy and Prospects," the organization called for a reduction of U.S. dependence on foreign oil supplies to decrease our vulnerability to disruptions of those supplies, as was experienced in 1973. Among USEA's suggestions were to deploy clean-coal technologies, construct additional electric power plants, reinstitute the nuclear option and expand use of renewable energy.

The association of about 100 energy-related organizations, corporations, government agencies, universities and professional societies also recommended expanded federal, academic and corporate support for energy-related research and development, and for policy changes to reduce regulatory and judicial delays for energy projects.

Nuclear, still up

Speaking of nuclear options, according to the U.S. Council for Energy Awareness (USCEA), six new units began commercial operation in the United States in 1988. Meanwhile, five new units started up in France, three in West Germany, two in Spain and one in South Korea, which brought the year-end total to 417 operating nuclear plants in 25 countries.

Now the organization is trying to assess the present and possible future effects of the closing of the Rancho Seco generating plant in California and the probable shutdown of the Shoreham plant on Long Island before the latter even began commercial operation. Are these straws in the wind or isolated instances?

Baseload, still down

Looking at a broader industry viewpoint, the Utility Data Institute (UDI) reports that the total number of new power plants being built for regulated electric utilities continued to decline last year. UDI points out that, on the average, utilities had been adding 20,000 MW of new steam-electric capacity annually to the national grid since the 1960s. But in 1988 slightly less than 10,000 MW of new capacity was placed online, and 1989 was projected to add only 6500 MW.

Projections by UDI through the year 1995 foresee less than 5000 MW of new plant per year for utility-owned generating capacity.

And the majority of new plants are not considered to be baseload capacity but are peaking gas turbines, combustion turbines or internal combustion units that burn gas and/or oil.

Not enough

During the same time period, UDI predicts approximately 3000-4000 MW will be added by nonutility power plant developers. Obviously, this will not make up the difference between additions during 1989-95 and those of the 1960-early 1980s time period.

The previous information is part of the story. What the *EL&P* Top 100 did is the other part.

TABLE 1.
FOSSIL FUEL CONSUMPTION

	1987	Change	1988	Change
Coal (million tons)	718	+29.7%	529	−35.7%
Oil (million bbl)	171	−15.7%	226	+24.3%
Gas (billion cu ft)	2,176	+4.5%	2,264	+3.9%

TABLE 2.
PEAK DEMAND AND RESERVE MARGINS

	1987	Change	1988	Change
Seasonal Peak (MW)	379,475	−3.0%	399,275	+5.2%
Total System Capability (MW)	481,573	−0.6%	485,982	+1.0%
System Reserve Margin	22.0%		17.7%	
Total Owned Capability (MW)	439,899	−5.1%	438,230	−0.4%
Owned Reserve Margin	16.0%		8.5%	
Average Load Factor	57.1		58.7	

TABLE 3.
TYPE OF GENERATION (MW)

Type	1987	Change	1988	Change
Conventional Steam & Combined Cycle	330,201	−3.4%	325,687	−1.4%
Hydro & Pumped Storage	22,032	−3.1%	22,272	−1.0%
Gas Turbines & Internal Combustion	34,720	+3.9%	39,318	+13.2%
Nuclear	67,134	+3.7%	66,072	−1.6%
Total	454,088	−1.5%	453,344	−0.3%

The main energy problem in the United States is illustrated in Table 2, which shows peak demand and reserve margins. Once more, both system capability and owned reserve margin for the Top 100 dropped—in this case from 22 percent in 1987 to about 18 percent in 1988 and 16 percent to less than 7 percent, respectively.

And, as mentioned, seasonal peaks climbed by more than 5 percent in 1988, exacerbating the situation.

Another factor, of course, was the "abnormally" hot summer. Was it really abnormally hot, or was it a harbinger of things to come, as those who espouse the Greenhouse Effect theory declare? By the time this appears at your desks, we may have an indication of the answer to this pressing question.

Note, too, the shift in the type of generation plant at those reporting (Table 3). The proportion of conventional-steam and combined-cycle generation declined by almost 1.4 percent among them, while nuclear, in spite of added plant, also declined by more than 1.5 percent.

As expected, gas turbines and internal combustion units were in the plus column, making up approximately 13-percent more of 1988's total capacity. This direction continued the trend reported on last year.

The surprise was in fossil-fuel consumption (Table 1). Oil use by those Top 100 investor-owned utilities reporting to *EL&P* climbed by 24 percent in 1988, as might be expected, after seeing a 16-percent drop in usage between 1986 and 1987. Gas burning for generation also went up, by 4 percent in 1988 compared to 1987—another confirmation of an expected trend.

But here's where the surprise lay—coal use showed a precipitous drop of about 35 percent; this after an increase in 1987 of nearly 30 percent.

This result does not fit in with other figures given for 1988. For instance, the Edison Electric Institute reported a 5-percent increase in utility coal usage for 1988. Consequently, caution is advised in taking the coal usage figures in this report at face value. The reason for the error(s), if there is an error herein, has not turned up yet.

However, EEI does closely match the number for change in oil usage—*EL&P* found an increase, as mentioned, of approximately 24 percent over 1987, while EEI reported an increase of a little over 25 percent.

The two reports also differed, though not as greatly as with coal, in reported changes in gas usage. *EL&P* totalled its

group as using 4-percent more gas in 1988, but EEI saw a drop of about 7 percent.

Heat rate change

The median net heat rate for 1988 reported by the Top 100 was 10,569 Btu/kWh. This number compares to a median for 1987 of 10,564, not a statistically significant change, but a small and unwelcome reversal in direction when compared to the median rate for 1986 of 10,610 Btu/kWh.

The 1986 figure had marked the first reversal in climbing heat rates in five years. Now that reversal has itself been reversed as the median thermal efficiency went back up. Here is a trend that should be watched very closely.

The listings of the individual Top 100 investor-owned utilities and their heat rates (Table 6) show what can happen in one, short year.

Green Mountain Power not only left first place, but went down to the Number 22 spot in the list. By doing so, the company let Commonwealth Energy System move from No. 2 to No. 1 and American Electric Power go from 3rd to second place.

New York State Electric & Gas jockeyed from No. 6 to No. 3, United Illuminating leapfrogged from sixth to fourth, and Potomac Electric Power jumped from No. 13 in last year's report to the fifth niche in this one.

Fossil rate movement

Commonwealth Energy not only claimed the Numero Uno system heat

TABLE 4.
TOP GENERATING UNITS BY HEAT RATE
(capac. factor > 50%)

Rank & Unit	Capacity (MW)	Utility	Heat Rate (Btu/kWh)
1. Comanche -1	260	Central & South West	8,884
2. Selews Creek -2	1,120	Duke Power	8,933
3. Canal -1	572	Commonwealth Energy	9,016
4. Marshall -4	660	Duke Power	9,029
5. Belew Creek -1	1,120	Duke Power	9,085
6. Trenton Chnl. -9	500	Detroit Edison	9,125
7. Sporn -5	450	American Electric Power	9,210
8. Campbell -3	719	CMS Energy	9,226
9. Marshall -1	385	Duke Power	9,232
10. Amos -2	800	American Electric Power	9,267
11. Somerset -1	684	New York State Elec. & Gas	9,286
12. Marshall -3	660	Duke Power	9,292
13. Cardinal -1	600	American Electric Power	9,310
14. Amos -1	800	American Electric Power	9,326
15. Monroe -3	750	Detroit Edison	9,332
16. Brayton Pt. -2	251	New England Electric	9,345
17. Bowen -4	973	Southern Cos.	9,348
18. Crystal River -5	717	Florida Progress	9,351
19. Big Sandy -2	800	American Electric Power	9,355
20. Brayton Pt. -1	252	New England Electric	9,359

Company	Rank	Heat Rate (Btu/kWh)	Up or Down	Coal (1000 tons)	Oil (1000 bbl)	Gas (1000 MCF)	Percent Change In Coal	Oil	Gas
Commonwealth Energy System*	1	9,578	D	0	8,065	2,312	0	30	-52
American Electric Power*	2	9,864	D	41,858	0	0	10	0	-100
New York State Electric & Gas	3	9,881	D	6,106	28	0	3	33	0
United Illuminating	4	9,889	D	861	6,211	43	9	10	-99
Potomac Electric Power	5	9,907	D	6,906	4,559	1,568	7	77	-77
Allegheny Power System*	6	9,938	U	16,781	0	0	2	0	0
CMS Energy*	7	9,945	D	6,671	1,164	272	3	131	145
Cincinnati Gas & Electric	8	9,976	D	8,419	1,845	205	6	67	177
DPL*	9	9,977	D	5,951	57	49	5	NA	NA
Florida Progress* (FPC)	10	9,985	U	5,835	8,114	2,483	2	-9	-7
New England Electric*	11	9,987	-	3,372	8,916	166	NA	NA	NA
Detroit Edison	12	9,990	D	18,443	1,082	13,136	-5	109	463
Duke Power	13	10,021	D	8,835	151	430	1	-3	140
SCANA Corporation* (SCE&G)	14	10,049	D	4,512	8	1,774	-2	700	575
Boston Edison	15	10,050	D	0	12,343	9,309	0	15	-60
Citicorp*	16	10,091	D	2,205	0	31	-2	0	138
TECO Energy*	17	10,093	D	6,884	73	0	0	11	0
Southern Company*	18	10,094	D	43,123	451	8,125	-2	151	-12
Central Hudson Gas & Electric	19	10,120	D	884	3,659	2,229	114	2	-63
Public Service of Indiana	20	10,125	U	10,755	0	0	-1	NA	0
Southwestern Public Service	21	10,152	U	7,911	3	28,323	10	0	9
Green Mountain Power	22	10,166	U	16[2]	122	441	-30	8	-23
Niagara Mohawk Power	23	10,211	D	3,058	11,980	12,103	9	67	-55
Union Electric	24	10,265	D	10,894	51	543	6	28	-5
Orange & Rockland Utilities	25	10,304	D	453	1,902	11,847	212	9	-21
Dominion Resources*	26	10,324	D	10,110	4,269	1,084	2	-3	-57
Central & South West*	27	10,340	D	15,885	79	196,060	34	-38	-2
Pennsylvania Power & Light	28	10,348	D	10,776	7,066	0	-1	1	0
Kentucky Utilities	29	10,368	D	6,127	6,519	0	8	152	0
FPL Group* (FP&L)	30	10,393	D	552	26,277	96,071	100	31	-28
General Public Utilities*	31	10,397	U	7,482	2,062	16,256	1	389	-26
Southern California Edison	32	10,405	D	5,759	4,563	170,731	10	239	-8
IPALCO Enterprises*	33	10,415	D	5,911	71	0	3	37	0
Midwest Energy*	34	10,416	D	2,020	6	1,636	7	-82	5
Atlantic Energy*	35	10,420	U	1,129	1,433	770	4	-1	-77
Gulf States Utilities	36	10,434	D	1,950	302	155,563	-1	37	-2
Duquesne Light	37	10,449	-	4,551	64	205	0	0	0
Baltimore Gas & Electric	38	10,458	D	4,714	2,430	3,512	16	0	-15
Illinois Power	39	10,472	U	6,773	159	738	-8	894	65
Long Island Lighting	40	10,476	D	0	19,922	28,281	0	11	17
Idaho Power	41	10,484	D	3,166	1	0	12	0	NA
Louisville Gas & Electric	42	10,498	U	4,016	0	221	0	0	784
Wisconsin Power & Light	43	10,499	D	3,649	22	365	-5	16	64
Carolina Power & Light	44	10,502	U	8,919	61	4,233	4	510	2319
Consolidated Edison	45	10,540	D	0	24,264	81,426	0	31	-4
Northern Indiana Public Service	46	10,555	U	6,247	2,938	140	28	13255	-84
Central Maine Power	47	10,558	-	0	2,999	0	0	0	0
Portland General*	48	10,561	D	1,508	0	0	69	0	0
Sierra Pacific Power	49	10,562	D	900	742	4,224	-12	91	182
Ohio Edison	50	10,569	D	11,552	0	28	7	NA	0
Philadelphia Electric	51	10,569	D	3,139	4,986	0	5	-2	NA
Public Service Enterprise Group*	52	10,606	D	3,988	5,895	35,369	3	89	-30
Utilicorp United	53	10,614	D	1,573	26	195	24	1200	1293
Public Service of New Hampshire	54	10,620	NA	1,221	4,986	0	NA	NA	NA
Central Louisiana Electric	55	10,631	U	2,222	0	26,043	22	0	-10
Rochester Gas & Electric	56	10,651	D	664	935	29	7	60	-61
El Paso Electric	57	10,659	D	431	0	19,504	0	0	3
Hawaiian Electric*	58	10,662	U	0	12,576	0	0	7	0
Iowa Southern*	59	10,665	D	1,390	17	0	8	-60	0
Central Vermont Public Service	60	10,665	D	31[2]	61	0	-28	-3	0
Pinnacle West Capital*	61	10,669	D	6,055	0	5,922	1	NA	28
St. Joseph Light & Power Co.	62	10,683	-	585	21	214	NA	NA	NA
Public Service of Colorado	63	10,707	D	6,591	28	336,526	7	-7	207
San Diego Gas & Electric	64	10,716	U	NA	1,626	38,937	NA	523	-26
Northern States Power	65	10,719	D	10,850	146	2,346	14	62	12
Kansas City Power & Light	66	10,733	U	5,959	74	185	0	12	49
Wisconsin Public Service	67	10,738	U	3,502	24	562	3	-17	115
Oklahoma Gas & Electric	68	10,742	D	6,391	14	94,086	1	0	-4
Iowa Resources*	69	10,769	D	1,975	10	724	7	-29	38
Southern Indiana Gas & Electric	70	10,794	U	2,560	0	211	17	0	23
Central Illinois Public Service	71	10,796	U	4,485	44	0	-1	42	0
Middle South Utilities*[1]	72	10,802	U	7,645	1,582	182,986	2	668	-8
Pacificorp	73	10,810	D	14,149	66	0	14	6	0
Iowa-Illinois Gas & Electric	74	10,861	U	2,652	9	515	8	-31	-1
Montana Power (Entech)	75	10,869	D	4,096	27	276	27	145	-41
Tucson Electric Power	76	10,871	D	2,243	0	2,277	21	0	-31
Texas Utilities*	77	10,941	D	29,676	577	360,777	2	48	1
Minnesota Power	78	10,948	U	4,114	0	0	16	0	-100
Madison Gas & Electric	79	10,987	-	795	4	580	1	0	12
Kansas Gas & Electric	80	11,033	U	2,972	106	7,897	-6	NA	37
Commonwealth Edison	81	11,037	U	10,209	1,969	1,140	-18	-38	252
Nevada Power	82	11,054	U	2,555	202	4,649	8	153	21
Public Service of New Mexico	83	11,132	D	3,485	308	1	1	7600	-100
Puget Sound Power & Light	84	11,172	U	3,539	NA	NA	NA		
Empire District Electric	85	11,274	U	1,806	18	68	64	157	-61
KPL Gas Service	86	11,308	D	6,251	12	2,484	5	-33	16
Interstate Power	87	11,399	U	1,980	14	2,645	4	56	189
IE Industries*	88	11,409	U	1,089	20	463	1	-9	47
Houston Industries*	89	11,423	U	15,477	403	271,015	-2	160	3
Otter Tail Power	90	11,639	D	1,995[3]	1,722	0	93	57300	0
MDU Resources Group, Inc.	91	12,019	NA	1,511	7	15	NA	NA	NA
Centel*	92	12,262	U	877	9	4,357	-3	29	6
TNP Enterprises* (Tex-NM Power)	93	NA	NA	0	0	6	0	0	200
Washington Water Power	94	NA	NA	1,804	7	5	24	250	67
Delmarva Power & Light	95	NA	NA	2,769	4,394	2,904	0	50	-46
Eastern Utilities Associates*	96	NA	NA	472	5,797	0	-11	104	NA
Centerior Energy*	97	1988 INFORMATION NOT PROVIDED					NA	NA	NA
Northeast Utilities*	98	1988 INFORMATION NOT PROVIDED					NA	NA	NA
Pacific Gas & Electric	99	1988 INFORMATION NOT PROVIDED					NA	NA	NA
Wisconsin Energy*	100	1988 INFORMATION NOT PROVIDED					NA	NA	NA

*Holding company
NA Not available
[1]Middle South Utilities is now Entergy Corp.
[2] Coal = Wood
[3]Lignite only
0 (in change columns), less than 1% change and/or zero amounts in both years

Company	Season Peak (MW)	Change (%)	Winter (W) or Summer (S)	Total System Capacity at Time of Peak (MW)	Total System Reserve (%)	Owned Capacity At Peak (MW)	Owned Reserve (%)	Load Factor (%)
Allegheny Power System*	6,045	6.9	W	7,685	26	7,906	31	70.0
American Electric Power*	17,164	10.3	S	21,910	28	22,243	30	65.4
Atlantic Energy*	1,636	2.1	S	1,807	10	1,537	-6	55.9
Baltimore Gas & Electric	5,381	3.7	S	5,930	10	5,417	1	54.6
Boston Edison	2,626	6.0	S	3,177	21	2,025	-23	60.5
CMS Energy*	5,869	8.7	S	6,370	9	6,361	8	61.7
Carolina Power & Light	8,078	7.5	S	9,529	18	8,981	11	57.4
Centel*	1988 INFORMATION NOT PROVIDED							
Centerior Energy*	1988 INFORMATION NOT PROVIDED							
Central & South West*	10,138	4.9	S	13,634	34	13,563	34	55.9
Central Hudson Gas & Electric	891	8.1	S	1,141	28	1,091	22	62.9
Central Illinois Public Service	1,724	5.6	S	2,428	41	2,680	55	53.1
Central Louisiana Electric	1,123	-1.6	S	1,706	52	1,686	50	53.3
Central Maine Power	1,454	-0.1	W	1,793	23	959	-34	71.8
Central Vermont Public Service	400	1.5	W	475	19	114	-72	68.6
Cilcorp*	1,120	12.8	S	1,121	0	1,136	1	52.3
Cincinnati Gas & Electric	3,996	12.3	S	4,180	5	4,030	1	55.2
Commonwealth Edison	17,459	11.3	S	22,521	29	22,521	29	51.1
Commonwealth Energy System*[2]	907	6.6	W	1,007	11	225	-75	59.4
Consolidated Edison	8,617	8.7	S	10,097	17	9,196	7	51.5
DPL*	2,585	10.6	S	2,642	2	2,642	2	58.1
Delmarva Power & Light	2,204	5.8	S	2,277	3	2,277	3	57.9
Detroit Edison	9,133	8.4	S	10,038	10	9,981	9	55.2
Dominion Resources*	11,756	2.0	S	12,833	9	11,471	-2	56.6
Duke Power	13,618	7.3	S	15,774	16	15,533	14	59.8
Duquesne Light	2,280	0.0	S	2,457	8	2,662	17	59.1
Eastern Utilities Associates*	813	4.0	S	942	16	575	-29	60.3
El Paso Electric	1,002	2.8	S	1,497	49	1,001	0	67.3
Empire District Electric	624	2.3	S	725	16	643	3	52.6
FPL Group* (FP&L)	12,382	-0.1	S	12,137	-2	13,331	8	59.5
Florida Progress* (FPC)	6,188	19.1	W	6,049	-2	6,125	-1	47.6
General Public Utilities*	7,987	9.2	S	8,760	10	6,775	-15	NA
Green Mountain Power	303	1.3	W	347	15	132	-56	65.0
Gulf States Utilities	4,910	-1.6	S	6,805	39	6,628	35	66.6
Hawaiian Electric*	1,321	4.5	W	1,553	18	1,511	14	72.0
Houston Industries*	10,422	1.2	S	13,675	31	12,855	23	60.0
IE Industries*	1,049	7.3	S	1,142	9	1,052	0	54.4
IPALCO Enterprises*	2,475	9.2	S	2,845	15	2,845	15	54.7
Idaho Power	2,161	3.9	S	2,482	15	2,417	12	64.0
Illinois Power	3,775	22.4	S	4,299	14	4,449	18	53.9
Interstate Power	919	11.8	S	NA	-100	951	3	57.7
Iowa Resources*	1,373	7.6	S	1,506	10	1,131	-18	46.3
Iowa Southern*	513	8.5	S	601	17	600	17	49.9
Iowa-Illinois Gas & Electric	1,078	5.0	S	1,262	17	1,392	29	51.2
KPL Gas Service	2,031	5.9	S	2,378	17	2,526	24	48.4
Kansas City Power & Light	2,656	4.9	S	2,992	13	2,992	13	46.8
Kansas Gas & Electric	1,657	1.4	S	2,410	45	2,430	47	52.5
Kentucky Utilities	2,767	13.5	S	3,010	9	3,107	12	55.5
Long Island Lighting	3,822	6.9	S	NA	NA	NA	NA	NA
Louisville Gas & Electric	2,141	15.7	S	2,263	6	2,263	6	50.0
MDU Resources Group	387	NA	S	451	17	410	6	54.0
Madison Gas & Electric	477	0.0	S	587	23	589	23	53.0
Middle South Utilities*[1]	11,442	1.5	S	15,086	32	15,460	35	58.0
Midwest Energy*	969	10.0	S	1,043	8	1,182	22	47.6
Minnesota Power	1,181	5.7	W	1,564	32	1,272	8	84.0
Montana Power (Entech)	1,900	53.6	W	1,725	-9	1,285	-32	70.0
Nevada Power	1,883	8.2	S	2,163	15	1,741	-8	47.1
New England Electric*	4,107	NA	S	4,919	20	3,893	-5	64.3
New York State Electric & Gas	2,574	1.7	W	3,058	19	2,673	4	63.5
Niagara Mohawk Power	6,220	7.6	W	7,340	18	5,514	-11	66.7
Northeast Utilities*	1988 INFORMATION NOT PROVIDED							
Northern Indiana Public Service	2,457	5.7	S	3,396	38	3,396	38	62.4
Northern States Power	6,923	8.6	S	7,823	13	6,753	-2	54.5
Ohio Edison	5,027	9.8	S	6,407	27	6,162	23	65.6
Oklahoma Gas & Electric	4,423	-4.5	S	5,948	34	5,703	29	48.7
Orange & Rockland Utilities	971	8.9	S	1,093	13	1,020	5	40.4
Otter Tail Power	551	14.1	W	738	34	626	14	61.7
Pacific Gas & Electric	1988 INFORMATION NOT PROVIDED							
Pacificorp	4,242	2.5	W	5,458	29	3,997	-6	67.0
Pennsylvania Power & Light	5,566	-0.4	W	7,479	34	8,360	50	62.0
Philadelphia Electric	6,826	4.3	S	6,294	-8	7,762	14	58.0
Pinnacle West Capital*	3,336	6.7	S	4,284	28	4,030	21	63.5
Portland General*	2,893	3.0	W	4,236	46	2,695	-7	59.8
Potomac Electric Power	5,211	1.1	S	5,675	9	5,375	3	52.7
Public Service Enterprise Group*	8,745	7.0	S	10,019	15	9,833	12	51.5
Public Service of Colorado	3,362	1.9	S	3,723	11	2,624	-22	70.1
Public Service of Indiana	4,401	12.4	S	5,861	33	5,627	28	55.4
Public Service of New Hampshire	1,416	NA	W	1,681	19	1,313	-7	59.3
Public Service of New Mexico	956	4.4	S	1,583	66	1,571	64	71.6
Puget Sound Power & Light	3,638	3.1	W	4,105	13	1,848	-49	55.0
Rochester Gas & Electric	1,275	5.8	S	1,403	10	1,057	-17	60.0
SCANA Corporation* (SCE&G)	1,275	-56.7	S	1,403	10	1,057	-17	60.0
San Diego Gas & Electric	2,831	19.0	S	3,275	16	2,602	-8	31.2
Sierra Pacific Power	908	11.7	W	1,116	23	836	-8	64.3
Southern California Edison	15,987	9.5	S	19,423	21	14,077	-12	55.8
Southern Company*	23,641	4.4	S	26,539	12	27,693	17	59.8
Southern Indiana Gas & Electric	1,024	10.8	S	1,167	14	1,167	14	62.4
Southwestern Public Service	2,830	0.4	S	4,251	50	4,051	43	64.4
St. Joseph Light & Power Co.	323	NA	S	361	12	336	4	48.4
TECO Energy*	2,620	9.1	S	2,801	7	3,027	16	56.1
TNP Enterprises* (Tex-NM Power)	NA	NA	NA	NA	NA	NA	NA	NA
Texas Utilities*	17,620	5.6	S	20,115	14	18,389	4	55.1
Tucson Electric Power	1,230	5.0	S	1,199	-3	1,330	8	58.9
Union Electric	6,978	2.1	S	7,710	10	7,473	7	52.9
United Illuminating	1,132	5.6	S	1,271	12	1,172	4	56.1
Utilicorp United	969	35.0	S	1,024	6	923	-5	47.8
Washington Water Power	1,359	0.8	W	1,755	29	1,465	8	56.0
Wisconsin Energy*	1988 INFORMATION NOT PROVIDED							
Wisconsin Power & Light	1,819	11.3	S	1,829	1	1,912	5	59.0
Wisconsin Public Service	1,510	9.3	S	1,704	13	1,096	12	70.2

NA Not Available
*Holding Company
[1]Middle South Utilities now Entergy Corp.
[2]Peak figures do not include Canal Electric

rate position for itself but also showed how good a job its operators were doing by being second only to Duke Power in best heat rate for fossil-fueled boilers (Table 5). In overall second place, American Electric Power was edged out of third fossil-fueled, heat-rate placement by CMS Energy's Consumers Power. And Florida Progress took the fifth-best fossil-fueled position while falling into the tenth spot overall.

The top unit operating more than 50-percent of the time and with the lowest heat factor was Central & Southwest's Comanche 1 (Table 5). Next in line was Duke's Belews Creek 2, followed by Commonwealth Energy's Canal 1.

But a significant story is that a Duke unit not only took second place here, other Duke units came in at four and five, and the company grabbed five of the top 20 slots. Not to be outdone by much, American Electric Power's generating units also were in five of these top 20. No other utility came close to these two in this category.

Caution, coal use

In last year's totals, coal usage by the Top 100 showed an overall increase of 2.5 percent; yet as reported, this year's figures for 1988 showed a drop of about 35 percent. Much of this drop can be seen at individual utilities in the list that reduced their reported coal consumption. Another factor entering into the drop is that not as many utilities reported their figures to *EL&P* as did for 1987's report.

The major burners of coal in 1988 were:

- Southern Co.—even though its consumption was down in 1988 by 12 percent to 43-million tons from 1987's 44-million tons.
- American Electric Power—up 10 percent at approximately 42-million tons.
- Texas Utilities—added 2 percent to its coal consumption in 1988, to a level of 30-million tons.
- Fourth was Detroit Edison—with 18-million tons consumed, for a reduction of 5 percent.
- Fifth was Allegheny Power System—about 17-million tons consumed and a small 2-percent increase.
- Central & South West—used 34-percent more coal, amounting to 16-million tons.
- Houston Industries—took nearly 16-million tons as it reduced coal consumed by about 2 percent.
- PacifiCorp—reported a little more than 14-million tons of the solid, black fuel burned in its plants for a 14-percent increase.
- Ohio Edison—used 7-percent more coal in 1988, a total of almost 12-million tons.
- No. 10 was Union Electric—approximately 11-million tons fed its appetite that grew by 6 percent in 1988.

Trouble ahead? Oil use

The touchy subject of increased oil usage by electric utilities—who are definitely not the only ones using a larger percentage of oil—caused concern within and without the industry itself.

Company	Fossil (MW)	Fossil (%)	Fossil Last Year Change (MW)	Hydro & Pump Storage (MW)	Hydro & Pump Storage (%)	Hydro & Pump Storage Last Year Change (MW)	Diesel/Combustion (MW)	Diesel/Combustion (%)	Diesel/Combustion Last Year Change (MW)	Nuclear (MW)	Nuclear (%)	Nuclear Last Year Change (MW)	Miscellaneous (MW)	Miscellaneous (%)
Allegheny Power System*	7,004	89	-85	902	11	0	0	0	0	0	0	0	0	0
American Electric Power*	19,539	87	0	788	4	-48	18	0	-43	2,130	9	0	0	0
Atlantic Energy*	797	52	-152	0	0	0	368	24	0	373	24	-158	0	0
Baltimore Gas & Electric	4,741	87	1650	0	0	0	717	13	0	0	0	-1650	0	0
Boston Edison	1,806	89	99	0	0	0	218	11	-21	0	0	-670	0	0
CMS Energy*	4,152	65	0	1,023	16	-66	385	6	38	822	13	19	0	0
Carolina Power & Light	5,068	56	0	218	2	0	1,018	11	0	2,676	30	0	0	0
Centel*	1988 INFORMATION NOT PROVIDED													
Centerior Energy*	1988 INFORMATION NOT PROVIDED													
Central & South West*	12,645	92	-914	0	0	0	674	5	674	315	2	315	159	1
Central Hudson Gas & Electric	908	83	7	43	4	0	43	4	5	97	9	97	0	0
Central Illinois Public Service	2,677	100	-19	0	0	0	3	0	0	0	0	0	0	0
Central Louisiana Electric	1,681	100	0	0	0	0	0	0	0	0	0	0	0	0
Central Maine Power	549	57	0	337	35	0	44	5	0	29	3	0	0	0
Central Vermont Public Service	22	19	1	41	36	0	31	27	-1	20	18	1	0	0
Cilcorp*	1	97	0	0	0	0	30	3	-2	0	0	0	0	0
Cincinnati Gas & Electric	3,379	88	24	0	0	0	475	12	0	0	0	0	0	0
Commonwealth Edison	9,703	43	0	0	0	-312	1,331	6	0	11,487	51	1120	0	0
Commonwealth Energy System*	1,027	95	0	0	0	0	59	5	-3	0	0	0	0	0
Consolidated Edison	6,323	68	150	0	0	0	2,076	22	0	849	9	0	0	0
DPL*	2,459	93	-9	0	0	0	183	7	0	0	0	0	0	0
Delmarva Power & Light	1,788	79	0	0	0	0	168	7	0	321	14	0	0	0
Detroit Edison	7,455	76	-344	917	9	153	525	5	0	913	9	913	0	0
Dominion Resources*	6,062	54	11	1,591	14	1	439	4	0	3,179	28	-1	0	0
Duke Power	6,428	41	0	1,452	9	0	599	4	0	7,054	45	-116	0	0
Duquesne Light	2,122	74	0	0	0	0	66	2	0	664	23	0	0	0
Eastern Utilities Associates*	508	85	-1	0	0	0	47	8	0	46	8	0	0	0
El Paso Electric	828	55	0	0	0	0	69	5	0	602	40	201	0	0
Empire District Electric	435	64	2	16	2	0	227	33	33	0	0	0	0	0
FPL Group* (FP&L)	8,441	62	125	0	0	0	2,372	17	-24	2,885	21	0	0	0
Florida Progress* (FPC)	4,195	68	-329	0	0	0	1,242	20	90	688	11	-113	0	0
General Public Utilities*	3,690	51	9	307	4	0	1,847	25	-138	1,460	20	-874	0	0
Green Mountain Power	13	8	-1	36	23	0	105	68	0	0	0	0	0	0
Gulf States Utilities	5,628	90	-200	0	0	0	0	0	0	655	10	0	0	0
Hawaiian Electric*	1,264	84	-4	0	0	0	246	16	20	0	0	0	0	0
Houston Industries*	11,464	86	19	0	0	0	1,410	11	0	385	3	385	0	0
IE Industries*	350	40	-164	0	0	0	167	19	11	350	40	0	0	0
IPALCO Enterprises*	2,771	97	0	0	0	0	74	3	0	0	0	0	0	0
Idaho Power	991	36	-1	1,742	63	7	50	2	0	0	0	0	0	0
Illinois Power	3,340	78	0	2	0	0	138	3	-12	806	19	0	0	0
Interstate Power	896	99	0	0	0	-55	11	1	11	0	0	0	0	0
Iowa Resources*	854	76	0	0	0	0	275	24	0	0	0	0	0	0
Iowa Southern*	574	99	0	0	0	0	6	1	0	0	0	0	0	0
Iowa-Illinois Gas & Electric	907	65	-49	3	0	1	97	7	-17	385	28	1	0	0
KPL Gas Service	2,192	87	23	0	0	0	334	13	-2	0	0	0	0	0
Kansas City Power & Light	2,075	69	38	0	0	0	387	13	17	530	18	0	0	0
Kansas Gas & Electric	1,896	78	2	0	0	0	3	0	0	530	22	0	0	0
Kentucky Utilities	3,087	97	-20	24	1	0	59	2	0	0	0	0	0	0
Long Island Lighting	2,515	67	2515	0	0	0	1,250	33	1250	0	0	0	0	0
Louisville Gas & Electric	2,134	95	0	0	0	0	108	5	0	0	0	0	0	0
MDU Resources Group	351	84	NA	0	0	NA	65	16	NA	0	0	NA	0	0
Madison Gas & Electric	409	69	0	0	0	0	87	15	0	93	16	-1	0	0
Middle South Utilities*[1]	12,108	73	0	70	0	0	572	3	-18	3,796	23	0	0	0
Midwest Energy*	985	83	-50	0	0	0	197	17	-3	0	0	0	0	0
Minnesota Power	1,157	91	-12	114	9	5	0	0	0	0	0	0	0	0
Montana Power (Entech)	970	65	0	520	35	0	4	0	0	0	0	0	0	0
Nevada Power	1,312	75	0	0	0	0	429	25	0	0	0	0	0	0
New England Electric*	2,617	66	2617	1,160	29	1160	56	1	56	141	4	141	0	0
New York State Electric & Gas	2,405	90	19	67	3	-1	7	0	0	194	7	194	0	0
Niagara Mohawk Power	3,546	64	-1	676	12	-1	237	4	0	1,054	19	444	0	0
Northeast Utilities*	1988 INFORMATION NOT PROVIDED													
Northern Indiana Public Service	3,145	93	0	10	0	0	241	7	0	0	0	0	0	0
Northern States Power	3,846	57	-7	226	3	3	1,127	17	3	1,549	23	-15	0	0
Ohio Edison	4,647	78	-112	0	0	0	139	2	0	1,185	20	0	0	0
Oklahoma Gas & Electric	5,644	99	0	0	0	0	59	1	0	0	0	0	0	0
Orange & Rockland Utilities	902	88	0	44	4	0	74	7	0	0	0	0	0	0
Otter Tail Power	534	85	0	4	1	0	87	14	0	0	0	0	0	0
Pacific Gas & Electric	1988 INFORMATION NOT PROVIDED													
Pacificorp	3,122	76	0	976	24	0	0	0	0	27	1	0	0	0
Pennsylvania Power & Light	11,820	82	6035	146	1	0	539	4	0	1,890	13	0	0	0
Philadelphia Electric	2,769	36	0	1,290	17	0	819	11	0	2,883	37	0	0	0
Pinnacle West Capital*	2,161	54	0	6	0	0	754	19	0	0	0	-739	1,108	28
Portland General*	661	25	-76	611	23	0	656	25	0	745	28	0	0	0
Potomac Electric Power	4,809	89	0	0	0	0	566	11	0	0	0	0	0	0
Public Service Enterprise Group*	4,329	43	17	185	2	0	2,763	27	50	2,807	28	-35	0	0
Public Service of Colorado	2,457	82	103	84	3	0	187	6	0	270	9	0	0	0
Public Service of Indiana	5,376	96	0	55	1	0	196	3	0	0	0	0	0	0
Public Service of New Hampshire	1,086	83	1086	68	5	68	119	9	119	32	2	32	0	0
Public Service of New Mexico	1,181	74	-105	0	0	0	20	1	0	390	25	130	0	0
Puget Sound Power & Light	857	19	-1	309	7	-1	3,449	75	2747	0	0	0	0	0
Rochester Gas & Electric	541	44	0	47	4	0	29	2	0	621	50	151	0	0
SCANA Corporation* (SCE&G)	2,286	59	0	756	19	0	259	7	1	590	15	0	0	0
San Diego Gas & Electric	1,841	68	-13	0	0	0	333	12	0	517	19	0	0	0
Sierra Pacific Power	742	89	0	7	1	-1	86	10	-1	0	0	0	0	0
Southern California Edison	8,768	62	-1304	1,154	8	211	1,621	12	1	2,541	18	193	0	0
Southern Company*	21,052	76	-2358	2,592	9	1	1,145	4	14	2,904	10	2904	0	0
Southern Indiana Gas & Electric	1,032	88	0	0	0	0	135	12	0	0	0	0	0	0
Southwestern Public Service	1,080	91	-2865	0	0	0	106	9	0	0	0	0	0	0
St. Joseph Light & Power	276	82	NA	0	0	NA	60	18	NA	0	0	NA	0	0
TECO Energy* 2,894	94	25	0	0	0	188	6	30	0	0	0	0	0	
TNP Enterprises* (Tex-NM Power)	38	78	0	0	0	0	11	22	0	0	0	0	0	0
Texas Utilities*	17,804	97	0	0	0	0	585	3	585	0	0	0	0	0
Tucson Electric Power	1,113	84	0	0	0	0	217	16	0	0	0	0	0	0
Union Electric	5,388	72	-183	631	8	0	379	5	0	1,118	15	-32	0	0
United Illuminating	1,120	95	-1	0	0	0	19	2	-3	43	4	1	0	0
Utilicorp United	629	68	15	0	0	0	294	32	-2	0	0	0	0	0
Washington Water Power	453	31	109	946	64	0	68	5	-33	0	0	0	0	0
Wisconsin Energy*	1988 INFORMATION NOT PROVIDED													
Wisconsin Power & Light	1,465	77	7	42	2	0	179	9	1	215	11	0	0	0
Wisconsin Public Service	1,270	75	-7	54	3	0	156	9	-3	216	13	0	0	0

NA Not Available [1]Middle South Utilities now Entergy Corp. *Holding Company

Proponents of nuclear and renewable energy sources used this sharp increase to push for their candidates. Neither appeared to get very far with either the federal government or the populace at large.

The troubles of the nuclear industry are well known. Less well-known are the cutbacks in funding for the various forms of renewable energy such as solar power and wind-generated power.

More biomass-burning plants are being built, but they, too, have had their share of problems. And they are still a very minor factor in the overall energy equation.

The Top 100 reporting totted up an increase in oil consumption in 1988 of a show-stopping 24 percent. EEI pretty well confirmed this figure with its own data showing a 26-percent leap in oil usage by the industry.

Some selected figures of the largest oil users in the electric generating field are:

- The largest reported user was FPL Group, which, at more than 27-million barrels consumed in 1988, showed an increase of 31 percent over 1987.
- Next in line came Consolidated Edison at a rate over 24-million barrels, a 31-percent increase over the year before.

Third was troubled Long Island Lighting, a company that used approximately 20-million barrels of "black gold." This increased its amount by 37 percent over the prior year's figure.

- To the west, the far west, Hawaiian Electric had to burn close to 12-million barrels to keep the luaus going and the lights at Waikiki burning.
- Back way east, Boston Edison consumed more than 12-million barrels of oil to maintain Beacon Hill and its song-feted transit system running.
- Further north and west, Niagara Mohawk Power used just under that 12-million figure for its generation.

After these, the amounts dropped off rapidly, but the picture of higher consumption was clear already.

Overall, the utilities listed here increased their usage of natural gas by 4 percent in 1988. Since federal agencies and the gas industry report such large reserves of this commodity in the United States, this could be considered an encouraging trend.

One reason for the increase may be

TABLE 5.
TOP SYSTEM HEAT RATES, FOSSIL-FUELED BOILERS

	Utility	Heat Rate (Btu/kWh)
1.	Duke Power	9,327
2.	Commonwealth Energy	9,567
3.	CMS Energy	9,639
4.	American Electric Power	9,749
5.	Florida Progress	9,803
6.	NY State Elec. & Gas	9,848
7.	Potomac Electric Power	9,853
8.	United Illuminating	9,867
9.	Detroit Edison	9,890
10.	Southern Companies	9,905

TABLE 9. TRANSMISSION AND DISTRIBUTION LINES IN OPERATION

Company	Transmission				Distribution							
					Overhead				Underground			
	Below 189 kV (circuit miles)	Miles Added	189 kV & Up (circuit miles)	Miles Added	Below 22 kV (pole miles)	Miles Added	22 kV & Up (pole miles)	Miles Added	Below 22 kV (cable miles)	Miles Added	22 kV & Up (cable miles)	Miles Added
Allegheny Power System*	3,449	35	1,107	0	49,743	307	4,573	-25	3,512	355	16	4
American Electric Power*	15,795	4	5,926	0	92,408	191	5,591	334	7,035	-16	458	98
Atlantic Energy*	1,168	0	63	-1	6,059	55	0	0	835	42	0	0
Baltimore Gas & Electric	648	12	489	0	NA	NA	732	-12	NA	NA	471	296
Boston Edison	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CMS Energy*	7,933	1	1,918	0	48,293	48293	0	-47944	0	0	6,918	337
Carolina Power & Light	3,111	1	3,029	19	NA	NA	37,837	240	NA	NA	4,730	575
Centel*	0	0	0	0	0	0	6,725[2]	75	0	0	694	140
Centerior Energy*	1988 INFORMATION NOT PROVIDED											
Central & South West*	9,784	-4350	520	-1293	57,605	161	520	7	5,820	85	359	21
Central Hudson Gas & Electric	526	0	76	0	6,403	41	46	0	882	79	0	0
Central Illinois Public Service	4,258	-11	304	-1	8,306	5	0	0	693	20	0	0
Central Louisiana Electric	766	0	353	41	0	0	10,692	-138	0	0	262	-527
Central Maine Power	2,011	-1	207	-1	17,027	-1	295	-1	657	-1	12	0
Central Vermont Public Service	622	0	0	0	7,243	65	0	0	152	16	0	0
Cilcorp*	283	0	47	0	5,593	-7	616	0	1,729	16	6	0
Cincinnati Gas & Electric	1,331	7	383	0	9,024	34	528	5	2,143	148	32	2
Commonwealth Edison	2,442	1	2,553	106	-	0	36,034	107	-	0	23,476	892
Commonwealth Energy System*	295	-5	61	0	3,761	-33	2,016	32	2,524	149	953	99
Consolidated Edison	22	0	409	0	25,366	19	488	6	58,414	111	6,826	104
DPL*	1,345	7	448	0	NA	NA	NA	NA	NA	NA	NA	NA
Delmarva Power & Light	1,123	0	263	0	1,795	20	4,773	-15	943	68	2,295	181
Detroit Edison	4,442	6	973	5	30,122	142	0	0	8,023	407	0	0
Dominion Resources*	2,868	-1	3,000	5	-	0	37,049	172	-	0	15,560	1096
Duke Power	9,336	20	3,100	42	48,698	511	9,414	96	4,842	603	2,385	214
Duquesne Light	512	0	148	0	6,358	0	404	0	2,218	0	426	0
Eastern Utilities Associates*	186	0	178	103	886	2	2,508	-57	250	11	819	24
El Paso Electric	681	12	788	-1	3,138	59	1,456	42	813	71	127	13
Empire District Electric	1,248	22	21	21	4,850	64	0	0	245	10	0	0
FPL Group* (FP&L)	2,255	40	3,289	77	-	0	35,963	574	-	0	13,618	894
Florida Progress* (FPC)	2,681	-5	1,557	-29	NA	NA	NA	NA	4,200	296	0	0
General Public Utilities*	4,414	-24	2,183	61	41,132	181	5,476	351	14,095	1394	1,274	-172
Green Mountain Power	281	0	0	0	2,236	22	19	0	274	32	6	0
Gulf States Utilities	3,588	2	1,152	2	18,139	111	1,395	15	1,747	23	109	5
Hawaiian Electric*	1,475	10	0	0	3,944	66	0	0	2,424	37	0	0
Houston Industries*	2,497	9	1,030	37	18,058	84	1,426	25	5,297	949	1,332	133
IE Industries*	3,212	14	66	-1	4,716	1	0	0	1,853	90	0	0
IPALCO Enterprises*	508	-2	454	0	4,679	10	0	0	4,590	263	0	0
Idaho Power	3,074	-111	1,481	0	13,076	60	4,152	31	4,735	105	205	20
Illinois Power	2,321	-26	484	0	16,655	45	1,330	-9	1,154	49	4	0
Interstate Power	2,514	-10	74	0	0	0	NA	NA	376	-172	0	0
Iowa Resources*	1,113	0	345	0	11,359	54	0	0	2,546	148	0	0
Iowa Southern*	932	-17	61	0	31,151	28004	0	0	0	0	461	12
Iowa-Illinois Gas & Electric	669	-20	305	0	4,659	27	0	0	1,203	14	0	0
KPL Gas Service	3,600	22	790	0	12,534	100	0	0	507	22	0	0
Kansas City Power & Light	1,343	-14	294	-1	8,850	34	0	0	5,600	328	0	0
Kansas Gas & Electric	1,593	0	663	0	7,775	32	0	0	2,146	122	0	0
Kentucky Utilities	4,272	129	412	0	14,447	151	0	0	864	52	0	0
Long Island Lighting	1988 INFORMATION NOT PROVIDED											
Louisville Gas & Electric	760	0	131	0	3,320	41	86	-20	2,094	122	0	0
MDU Resources Group	2,831	NA	319	NA	2,825	NA	0	NA	1,748	NA	0	NA
Madison Gas & Electric	179	0	124	0	1,077	0	0	0	673	0	0	0
Middle South Utilities*[1]	7,199	51	2,977	-96	66,730	477	4,761	83	3,551	168	1,704	36
Midwest Energy*	2,145	-14	184	-7	0	0	0	0	NA	NA	NA	NA
Minnesota Power	1,539	2	607	0	5,346	1542	640	-15	967	-4	15	-4
Montana Power (Entech)	5,547	22	1,445	0	12,963	68	0	0	0	-1171	NA	0
Nevada Power	551	0	638	25	2,882	35	0	0	3,457	270	0	0
New England Electric*	2,001	2001	633	633	16,702	16702	804	804	7,311	7311	221	221
New York State Electric & Gas	3,769	-1	813	0	30,641	193	1,973	-26	0	0	0	-1728
Niagara Mohawk Power	8,060	28	1,126	0	-	0	108,520	338	-	0	7,672	311
Northeast Utilities*	1988 INFORMATION NOT PROVIDED											
Northern Indiana Public Service	2,653	3	332	0	7,634	1	0	0	798	56	0	0
Northern States Power	5,474	20	1,470	10	28,098	2884	0	0	11,714	216	0	0
Ohio Edison	4,903	-8	628	1	24,847	73	0	0	3,430	258	0	0
Oklahoma Gas & Electric	3,597	15	982	0	0	20,480	70	-	0	5,707	78	
Orange & Rockland Utilities	471	0	80	0	4,690	9	0	0	1,061	66	0	0
Otter Tail Power	4,855	0	410	-12	NA	NA	NA	NA	NA	NA	NA	NA
Pacific Gas & Electric	1988 INFORMATION NOT PROVIDED											
Pacificorp	3,543	-71	3,238	0	-	0	28,173	-15	-	0	8,209	357
Pennsylvania Power & Light	0	0	1,308	0	48,903	604	2,401	11	8,145	643	14	0
Philadelphia Electric	337	-21	744	0	11,830	132	61	0	16,700	409	17	0
Pinnacle West Capital*	NA	NA	NA	NA	10,693	8	NA	NA	6,992	441	NA	NA
Portland General*	935	6	1,038	0	7,973	34	0	0	5,127	179	0	0
Potomac Electric Power	26	0	783	0	4,515	-7	319	21	10,760	421	784	46
Public Service Enterprise Group*	270	0	722	0	NA	NA	47	0	25,942	806	2,633	606
Public Service of Colorado	1,606	26	1,315	0	11,522	-8	1,496	14	5,423	118	231	7
Public Service of Indiana	3,996	-4	1,394	0	18,233	-2	0	0	2,565	172	9	9
Public Service of New Hampshire	1,512	1512	260	260	0	0	10,132	10132	0	0	742	742
Public Service of New Mexico	888	0	1,896	0	4,707	4707	0	-4670	2,328	2328	0	-2232
Puget Sound Power & Light	1,853	87	222[3]	5	9,996	-4	144	0	4,546	183	20	0
Rochester Gas & Electric	706	-7	0	0	6,729	5	0	0	4,178	-73	0	0
SCANA Corporation* (SCE&G)	2,409	26	788	0	6,228	96	7,621	168	NA	NA	NA	NA
San Diego Gas & Electric	1,122	4	605	-1	7,288	8	0	0	7,457	433	0	0
Sierra Pacific Power	3,486	3232	0	0	0	0	7,957	7248	0	0	3,014	2758
Southern California Edison	6,581	217	5,326	87	NA	NA	44,680	336	50,360	5407	119	-49
Southern Company*	19,895	196	6,360	115	-	0	92,248	3844	-	0	17,339	2172
Southern Indiana Gas & Electric	860	0	0	0	3,177	-1	0	0	796	27	0	0
Southwestern Public Service	4,020	-1	1,514	39	NA	NA	NA	NA	NA	NA	NA	NA
St. Joseph Light & Power	415	NA	117	NA	2,165	NA	0	NA	133	NA	0	NA
TECO Energy*	804	1	354	0	6,644	47	0	0	1,966	131	0	0
TNP Enterprises* (Tex-NM Power)	2,554	900	40[3]	20	8,408	32	0	0	486	18	0	0
Texas Utilities*	8,874	117	3,834	14	48,194	233	4,143	417	6,230	556	1,956	261
Tucson Electric Power	325	2	1,504	0	7,147	174	521	-6	3,217	78	0	-33
Union Electric	2,201	-22	988	0	20,485	146	4,000	28	8,993	543	359	-2
United Illuminating	91	0	6	0	2,084	23	0	0	1,083	32	0	0
Utilicorp United	1229	0	58	0	6,717	2001	104	104	720	194	0	0
Washington Water Power	1,507	0	657	-10	9,686	-11	588	0	1,430	62	0	0
Wisconsin Energy*	1988 INFORMATION NOT PROVIDED											
Wisconsin Power & Light	2,638	-1	106	-1	16,841	20	0	0	1,267	91	0	0
Wisconsin Public Service	1,528	-32	124	0	-	0	19,495	1553	-	0	1,766	182

NA, Not Available
*Holding Company
[1]Middle South Utilities now Entergy Corp.
[2]Wire miles
[3]Pole miles
[4]Cable miles

the drop in prices of the fuel in recent years. For instance, as reported by Andersen-Cambridge, the average delivered price of natural gas was $2.31/Mcf in 1987, which was down 11¢ from 1986.

In addition, using their figures, Andersen and Cambridge calculated that gas cost 77.6¢ less per million Btu than oil. (But of course this changed as oil prices dropped further in 1988.)

Another reason could be the relatively low capital cost to a utility of adding gas-fired capacity.

No matter what the reasons, the largest gas users reported by the Top 100 were:

- Texas Utilities—at almost 361 MMCF burned in 1988.
- Public Service of Colorado—using more than 336 MMCF.
- Houston Industries—consuming about 271 MMCF.
- Central & South West—at approximately 196 MMCF.
- Middle South Utilities—decreased its usage this year, but still consumed almost 183 MMCF of natural gas in the year 1988.

T/D, a key element

Transmission and distribution have become a much more important element in the electric power supply formula in this country as shortages in one area are met with imported power from others, including Canada. And even the Europeans are beginning to pay a lot of attention to T and D as the year for the merging of the European Community approaches.

The European Community Commission recently adopted proposals to open up their wholesale markets in electricity and natural gas. The measures, noted the *Wall Street Journal*, would establish wide access to energy networks in the EC countries.

Does this sound familiar? The *Journal* quoted Antonio Cardosa e Cunha, EC commissioner for energy affairs, as saying the ultimate goal was to allow "a consumer in one country to buy electricity from any other country."

The North American Electric Reliability Council (NERC), however, noted that bulk transmission systems in most regions were expected to have adequate margins.

Yet in its 1989 Summer Assessment, NERC also noted that portions of the bulk systems in some regions might be loaded to their safe operating limits much of the time by intersystem transfers superimposed on the normal loading.

In particular, the organization warned of "marginally adequate" interregional transfer capability in the Midwest and extremely low incremental transfer capability in eastern regions because of continuing high levels of west-to-east transfers.

The catch: one major assumption made in NERC's assessment was that weather would be "normal." In other words, if the U.S. sees another hot, dry summer, watch out.